

## Article

# The Importance of Spiritual Ecology in the Qingyuan Forest Mushroom Co-Cultivation System

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**Abstract:** The ecological value encapsulated in the term “spiritual ecology” is drawing more and more attention from ethnology, folklore, ecology, and other related disciplines. The custom of respecting and pacifying forest spirits has distinct regional and ethnic characteristics, and many scholars have discovered samples from different studies around the world. Qingyuan County, located in the mountainous region of southwest Zhejiang, is a very typical case of the practice of respecting and pacifying forest spirits. The mushroom-cultivation technology invented by the chthonic people there more than 900 years ago made this the global birthplace of artificial mushroom cultivation. The Qingyuan Forest–Mushroom Co-cultivation System (QFMCS) has been listed as an important agricultural heritage system by the Ministry of Agriculture and Rural Affairs of China, Beijing, China and a candidate project by the Food and Agriculture Organization of the United Nations, Rome, Italy for Globally Important Agricultural Heritage Systems (GIAHS). Additionally, the QFMCS is currently an important part of the Baishanzu National Park under construction. The authors made an in-depth field study in the mountainous areas of Qingyuan and used theoretical methods of ecology, anthropology, and folklore to reveal the function spiritual ecology plays in ecological conservation, forest protection, identity, and the maintenance of community interests. In the “traditional-modern” transformation of Qingyuan County, the practice of respecting and pacifying the Spirits is still being propagated, resulting in expansion and social cohesion.

**Keywords:** spiritual ecology; forest spirits; sacred natural sites; mushroom co-cultivation system; Zhejiang province; agricultural heritage systems



**Citation:** Zhu, G.; Cao, X.; Wang, B.; Zhang, K.; Min, Q. The Importance of Spiritual Ecology in the Qingyuan Forest Mushroom Co-Cultivation System. *Sustainability* **2022**, *14*, 865. <https://doi.org/10.3390/su14020865>

Academic Editor: Antonio Miguel Martínez-Graña

Received: 3 October 2021

Accepted: 29 December 2021

Published: 13 January 2022

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## 1. Introduction

The global wave of industrialization and urbanization is increasingly highlighting its negative impact on ecological and human environments. Numerous ecological resources and cultural heritage systems are disappearing at an accelerated rate [1]. Humans have been the driving force in changing the Earth system, causing certain anthropogenic changes in the atmosphere, lithosphere, hydrosphere, and biosphere. With abnormal changes in the global climate, extreme weather is more frequent and intense, causing enormous or even irreversible damages and even political conflicts and violence in some cases. The United Nations Convention on Biological Diversity (1992) covers the protection and conservation of various plant and animal species and their habitats. Biodiversity covers all living systems on earth, both terrestrial and marine. The UN’s Global Biodiversity Outlook warns that the growing climate crisis is worsening prospects for biodiversity—which includes all the trees, plants, and animals in forests or all the fish and corals in coral reefs. Biodiversity is being

lost at an unprecedented rate, and the pressures leading to it are intensifying. However, some indigenous societies have largely maintained a dynamic harmony and balance with their habitats by certain special practices. These practices often would not degrade the natural habitats irreversibly. Instead, they would make it restore itself naturally, positively, and continuously. The long-term ecological footprint of the traditional indigenous society is relatively mild even after accumulation of centuries or even thousands of years, compared with the industrial and urban society. Their spiritual ecology is the key to the dynamic sustainable development of economy and society [2]. The indigenous people in many places gradually have a deep understanding of the local natural ecosystem after generations of living practice. Then, they found out what is sustainable and what is not. This may be the main reason why spiritual ecology is beneficial for environmental protection and biological diversity [3]. In this context, out of concern for the future of mankind and the cultural consciousness of preserving human cultural heritage systems, a broad consensus has been reached worldwide on the idea of sustainable development, including ecological resources conservation, cultural heritage protection, national park construction, and so on. Studies have shown that folklore traditions of ecological protection have the power to let people internalize conscious actions beneficial to national park construction [4,5].

Many peoples around the world have chthonic beliefs in respecting and pacifying the Spirits. They believe that the tree spirits have the power to benefit mankind. For example, the Spirits can bring clouds, rain, and sunshine; bless bountiful crops and thriving livestock; and bless women with many children and good fortune. There is a widespread practice of respecting and pacifying the Spirits in Globally Important Agricultural Heritage Systems (GIAHS) heritage sites, such as in the Hani Rice Terraces and the Ancient Jujube Garden in Jia County, Shaanxi Province, China [6,7]. Respecting and pacifying the Spirits is closely related to local agricultural production and residents' life and also serves as an intangible force that maintains their established lifestyle, while guiding and restraining people's behaviors. Furthermore, it also plays an important role in maintaining the balance and stability of natural systems and sustainable development [8,9]. The sacred natural landscape includes various types of natural features, such as mountains, hills, forests, groves, rivers, lakes, lagoons, caves, islands, and fountains. There are great differences in their sizes, from a very little tree, a small fountain, or a small rock, to the whole forest and mountain. These sacred natural relics have been well protected in a long period of time [10]. In 2014, a panel for the study of cultural and spiritual value in the reserve, which belongs to the World Conservation Union, Gland, Switzerland, drew up an Act of "the promotion of putting the cultural and spiritual significance of the nature under the governance and management of the protected and conserved areas," which includes the cultural and spiritual significance of the nature to various societies. They sought support from the local community, aboriginal traditions, and the public [11]. Through these events, which had a significant influence, the concept of spiritual ecology has been understood and accepted by more people.

The British early anthropologist J.G. Frazer (1854–1941) was the first to put forward the concept of tree worship. Later studies in anthropology showed that tree worship did not prevail at any time in world history. In ancient Greek and Roman mythology, the tree is only the place where the god of the forest resides [12]. His long work, *The Golden Bough: A Study in Magic and Religion*, has been criticized to the fullest. Studies have pointed out that *The Golden Bough* has statements that made excessive conjectures and assumptions. Making assumptions about the origin of a certain myth and obtaining folklore by field study are completely different things [13]. Needless to say, as an early anthropologist, Frazer blazed a trail and made contributions that laid a foundation for later studies. Such comments do not include praise for his own research methods used in anthropology and his mistakes and flaws in the opinions and statements in *The Golden Bough*. Most of his works are about the religion of the Greeks, Romans, or Hebrews [14]. The most conspicuous flaw of *The Golden Bough* is that Frazer neglected economics as the source of motivation for human behavior. The objects he focused on are described as irrational barbarism and

“survivors” from an age of brutal and childish absurdity [15]. The folklore about the “mistletoe” tree god [16], which the title of the book *The Golden Bough* was based on, was even queried by later anthropologists, because it has had no empirical cases in field study in anthropology until now. Great changes had taken place in anthropology later, and, as a result, his name had suffered an eclipse in the rolling waves of anthropology [10]. So, this article gives up Frazer’s outdated and academically controversial opinions about “tree worship” and “the golden bough.” We built a narrative mode of “spiritual ecology” and used “Sacred Natural Sites” and “natural spirits” to build up the logical system of this article. We expound the close relation among the local people and the trees, mountains, geomantic forests, and mushroom mountain forests, revealing its important cultural and ecological significance.

Chinese scholars have conducted many innovative studies on spiritual ecology. For example, Baiping Chen’s study on the relationship between Tibetan religious beliefs and plants showed that the belief in forest spirits among Tibetans in China effectively protected local flora, especially medicinal plants [17]. Zhen Ni’s study on spiritual ecology among the Qiang people in western China indicated the important historical value for the ecological environment [18]. Shilun Zhong’s study on forest spirits among the ancient Bashu people in Sichuan Province and Yongzhen Fan’s study on the custom of respecting and pacifying forest spirits among the Mongolian people of the northern grasslands showed that they play a positive role in maintaining ecological balance and ethnic value identity [19,20]. The inhabitants of many villages in China believed that the spirits of their earliest ancestors reside in the trees and are still protecting and blessing them all the time. Some villages have sacred forests nearby, in which the trees are dead and decaying. Before moving the dead trees or other objects, they must ask the permission of the tree spirits that reside in the enspirited forest. If they do not have the permission and the Spirits have not been pacified, this may lead to certain forms of retribution, such as death, disease, and crop failure, etc. These beliefs in causality show a strong relation to the practice of respecting and pacifying the spirits [21].

People’s practice of respecting and pacifying the spirits had led to the formation of many taboos, including the prohibition of cutting down trees in the sacred forests, the prohibition of destroying ancient trees at will, and so on. A subconsciousness of protecting forest ecology exists in these taboos [22]. For example, the custom of respecting and pacifying the forest spirits in Hani terraced villages has led to the effective protection of local water conservation forests [23]. Jujube spirit-worship in Jia County, Shaanxi Province has led to the protection of ancient jujube forests for generations, which has become a model of soil and water conservation in the middle Yellow River basin [24]. In addition, J. Colding and C. Folke’s study on social taboos in local resource management and biological conservation showed that “resource and habitat taboos” (RHTs) in many traditional societies often guide human behavior in regard of the natural environment and function similarly to nature conservation institutions in modern societies [25]. In a case study on biodiversity conservation in traditional coffee systems in Mexico, it can be seen that traditional shade coffee plantations are important repositories of biological groups such as trees and epiphytes, mammals, birds, reptiles, amphibians, and arthropods. These traditional coffee plantation shade systems play a significant role in ecological protection [26]. In Israel, located in the Middle East, sacred forests are the place where the gods and the spirits of the ancestors reside. So, the sacred forests are more or less reserved in the religious venues [27]. The above research results stand from different countries, different ethnic groups, and different geographical environments, predicated on the multi-faceted, multi-level dimensions of spiritual ecology, which provides useful case studies and enlightenment for this study.

The object of this study was Qingyuan County, Zhejiang Province, China. For a long time, the inhabitants of this area were “forest people” who lived by picking and growing mushrooms in the forest. For the Qingyuan forest people, spiritual ecology implies the simple idea of harmonious coexistence between “man and tree” [28]. While obtaining

stable living resources, people maintain the lush mountains and lucid waters of their home. Objectively, they achieve the synergistic evolution of natural ecology, social ecology, cultural ecology, and community ecology and realize the sustainable development of the forest–mushroom co-cultivation system.

Through the field investigation and in-depth study of the spiritual ecology practices in Qingyuan, the authors reveal the multiple functions of the practice of respecting and pacifying the spirits inherited from ancient times. The forest–mushroom co-cultivation heritage system shows ecological conservation and sustainable development, as well as their important ecological value and historical reference significance in the contemporary era.

Through field investigation and analysis of spiritual ecology, the following questions were sought to be answered: What cultural heritage systems of contemporary value have the practice of respecting and pacifying the spirits, which emerged in ancient times, left behind in the long history of civilization? How do they link up with the contemporary idea of sustainable development and national forest park construction for cultural values? This article outlines Qingyuan's trajectory of civilization from the chthonic belief of respecting and pacifying the Spirits to contemporary sustainable development with real cases and clear logic [29].

The ancestors of Qingyuan lived on planting mushrooms. Cherishing and protecting the mountains and forests, they worked and prospered under the forests. They have planted mushrooms in the mountains for more than 900 years, and the mountains where mushrooms are grown were not destroyed; the woodlands where they lived were not damaged; and even the mushroom farms in the forests, which have been run continuously for nearly thousands of years, were not left with production and household waste. This proves that the core belief in spiritual ecology is relevant to the contemporary concept of sustainable development and has important practical value for maintaining the ecological balance of forest systems, biodiversity, and the construction of national forest parks.

## 2. Methodology

### 2.1. Introduction to the Study Area

Qingyuan County, located in Zhejiang Province, is in the mountainous and hilly area south of the Yangtze River with an average elevation of 1000 m. The geographical location is  $119^{\circ}03' \text{ E}$ – $119^{\circ}15' \text{ E}$ ,  $27^{\circ}39' \text{ N}$ – $27^{\circ}51' \text{ N}$ . Due to the intense crustal movements in different geological eras, the Earth's crust around Qingyuan has undergone many uplifts, and the mountains rise up with dense forests [30]. The geographical location is shown in Figure 1:

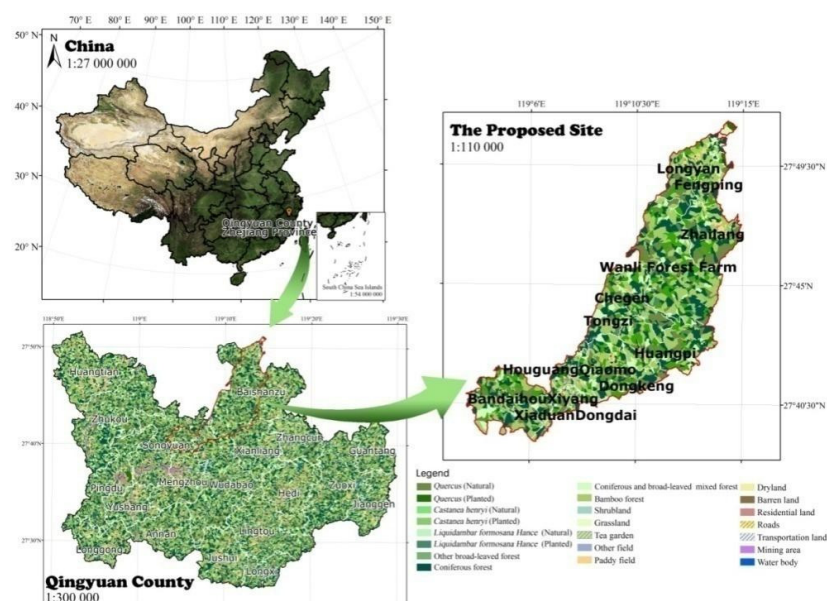


Figure 1. Geographical location of Qingyuan County, Zhejiang Province.



Qingyuan County has a forest land area of 167,800 hm<sup>2</sup>, accounting for 87.6% of the county's area. According to field survey data, there are 746 species of native woody plants, belonging to 89 families and 361 genera. Based on their characteristics and functions, they can be divided into eight types, namely, isolated trees, shade trees, street trees, flowering trees, fruit trees, foliage trees, afforestation trees, and bonsai trees [31]. What is even more valuable is that large quantities of medicinal plants are preserved in the Baishanzu Reserve in Qingyuan. The survey shows that there are 97 families and 372 species of medicinal plants in Baishanzu, Qingyuan. The ecological environment of Qingyuan is suitable for the growth and reproduction of wild fungi. There are 423 species of macrofungi in Qingyuan, among which 360 species are edible and medicinal [32].

The practice of spiritual ecology has given birth to diverse forms of forest ecological culture and mushroom culture and the formation of a unique method of forest land use and a mountain forest ecological landscape. The county has a woodland area of 167,800 hm<sup>2</sup>, accounting for 87.6% of the county's area. It is very rich in animal, plant, and microbial resources. Qingyuan has a mid-tropical monsoon climate, which is warm and humid, with four distinct seasons. The county has a mild but not-cold winter, abundant rainfall, no summer heat, and a large temperature difference between day and night, bringing extremely favorable natural conditions for edible mushroom production and promoting the plantation of mushroom.

The practice of spiritual ecology has effectively protected the original status of forest trees and rich tree species in the mountainous areas of Qingyuan and achieved good biodiversity maintenance. On the vast forest land, there are more than 2000 species of plants and 423 species of macrofungi, including 360 species of edible or medicinal fungi. In the mind of the local people, these trees are the sacred places where tree spirits, forest spirits, Gushan spirits, and Feng shui forest spirits resides or depend on. To pacify all these Spirits, these trees and forests must be well protected, and then the biological diversity can be protected. Qingyuan has 34 species of rare plants that are listed in the Red Book of Chinese Plants: *Abies beshanzuensis*, *Pseudotsuga gaussenii*, *Tsuga tchekiangensis* Flous, *Pseudolarix*, *Fokienia hodginsii*, *Pseudotaxus chienii*, *ginkgo*, and *Torreya jackii* Chun, four of which are national Class I protected plants, and 23 of which are Class II protected plants.

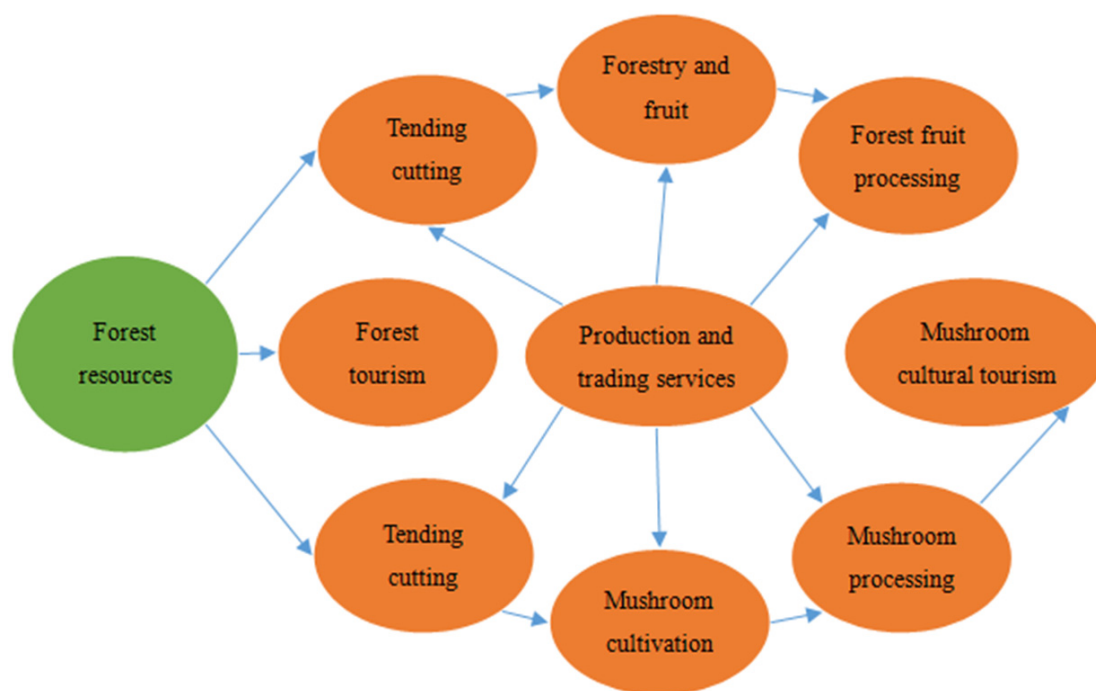
The ancestors of Qingyuan people picked or grew mushrooms in the forest for a living. The forest is their main source of livelihood. The local people have been planting mushrooms by manual work since the 12th century AD and have maintained a standard of living above the average of the neighboring areas for almost a thousand years until now. The forest-based forestry and fruit-growing and mushroom cultivation constitutes an industrial chain with a diversified structure, sustainably guaranteeing local economic development and the income of mountain farmers, while achieving a harmonious coexistence between man and nature. In recent years, more than 70,000 people have been engaged in the edible mushroom industry in the county, accounting for more than 50% of the county's agricultural population, with an annual cultivation volume of 150 million bags of edible mushrooms, an annual output of more than 100,000 tons, and a total output value of more than CNY 3.5 billion. The county has nearly 300 edible mushroom enterprises, the largest mushroom market in China, and the largest mushroom trading center and logistics center in China, thus forming a complete industrial chain of edible mushroom production, processing, storage, trade, logistics, and material supply for production [30], as shown in Figure 2.

Over the past millennia, the mushroom farmers of Qingyuan have adhered to the traditional mushroom-growing technique predicated on spiritual ecology—Duohua. Qingyuan's edible mushroom-cultivation technique has gone through three development stages: Duohua, log cutting, and substitute cultivation. Although the efficiency of the log cutting and the substitute cultivation methods, which rely on artificial inoculation, has greatly improved, the cultivation principle is the same line as that of Duohua. Many traditional methods still have referential significance for modern edible mushroom cultivation. The Duohua cultivation technique is a comprehensive technical measure with Duohua as the key, which includes eight successive steps, namely, site selection, cutting-down of the tree,

Duohua, shielding, Changhua, shielding-removal, Jingxun (hitting mushroom tree), and picking and baking (Figure 3). The intermittent cutting technique used by the mushroom farmers of Qingyuan in their production effectively prevents the single cutting of a certain tree species in the forest or the over-cutting harvesting of certain woodlands, ensuring that the forest can renew naturally and achieving the goal of maintaining the sustainable use of forest resources in the heritage site.

These traditional knowledge and production experience are completely consistent with the current concept of forest protection and forest-protection law. For example, item 2 of Article 55 of the Forest Law of the People's Republic of China (effective on 1 July 2020) stipulates that "commercial forests shall adopt different cutting methods according to different situations, strictly control the cutting area, and implement simultaneous cutting and cultivation." In October 2021, the first phase of the 15th Conference of the Parties to the Convention on Biological Diversity (COP15) was held in Kunming, China. Adhering to the vision of a community with a shared future for mankind, the Chinese government is working with other parties to open a new chapter in the future of biodiversity conservation. It is in this context that our article explores the positive role of traditional knowledge and folk customs in biodiversity conservation.

The traditional mushroom-cultivation technique is based on the custom of spiritual ecology. On the one hand, it has made use of the adequate forest resources to continue mushroom production to this day. On the other hand, it has also protected a good ecological environment and formed a forest–mushroom co-culture system including sustainable forest management, understory industry development, cultivation, processing, and utilization of mushrooms and mushroom culture.



**Figure 2.** Industry chain of forestry and fruit-growing, mushroom cultivation, and their interrelations in Qingyuan County.



**Figure 3.** Duohua cultivation technique can be divided into eight successive processes: (a) Site selection; (b) cutting-down of the tree; (c) Duohua; (d) shielding; (e) Changhua; (f) shielding-removal; (g) Jingxun (hitting the mushroom tree); (h) picking and baking.

## 2.2. Research Methodology

The authors adopted a combination of field visits and a literature search to conduct an interdisciplinary and multi-level study in a comprehensive and systematic way. The team conducted many field investigations in Qingyuan for a long time and obtained many important and leading research materials.

### 2.2.1. Investigation Time

Field visits and on-site interviews were conducted 5 times. The villagers interviewed were all the members of the indigenous Han nationality, local officials, and government staff who were either native or sent from other places outside the county.

The first field investigation was from 6–14 December 2012. Qingyuan County proposed to apply for the “Qingyuan Mushroom Culture System” national agricultural heritage projects. During this period, 5 people of our research team collected basic information from Qingyuan County, including Qingyuan’s development history, mushroom production, mushroom folk culture, local folk activities, etc. The interviewees included 22 villagers, 5 professional mushroom growers, 3 relevant officials from Qingyuan County, and 3 Agriculture Bureau staff.

The second time was from 8–22 May 2013. The research group was invited to assist the Qingyuan County government in compiling the Qingyuan Mushroom Culture System Protection and development plan to conduct the field investigation. Four people of our team mainly investigated the Qingyuan mushroom culture and spiritual-ecology customs. The participants included 17 villagers, three relevant officials from Qingyuan County, and five members of the Qingyuan County Cultural Center. Due to the professional and academic assistance of our team, the “Zhejiang Qingyuan Mushroom Cultural System” was recognized as the “Important Chinese Agricultural Heritage” by the Ministry of Agriculture (Beijing, China) in June 2014.

The third time was from 18–24 January 2015. The Qingyuan government was preparing for the application of the Globally Important Agricultural Heritage System. They again invited four people from the research group to Qingyuan to investigate, and they decided to change the mushroom heritage project to the “Zhejiang Qingyuan Forest-Mushroom Co-Cultivation System.” We mainly investigated the status of the Qingyuan edible fungus industry and the organization of Qingyuan spiritual ecology activities. At the same time, I visited 12 important Feng shui forests, mountains where mushrooms are grown, and temples in the mountains. The informants included 28 villagers (including 6 mountaineering tour guides), 5 leaders of the Qingyuan edible fungus industry, and 2 relevant officials in Qingyuan County.

The fourth was from 22–30 March 2018. Professor Min Qingwen, the corresponding author, led 9 members of the research group (including 4 graduate students) to Qingyuan to comprehensively carry out an in-depth investigation of historical origins, folk custom activities, social-value evaluation, dynamic monitoring, and traditional cultivation systems. This time we continued to investigate the issue of Qingyuan spiritual-ecology customs and taboo activities. The informants included 20 villagers. In order to ensure the accuracy of the information collected about the activities, we interviewed 5 village heads, 2 employees of a county cultural center, and 3 Qingyuan mushroom history researchers by telephone, and we verified the interview data.

The fifth time was from 12–20 January 2019. The first author of this article, Associate Professor Zhu Guannan, and three members of the team did fieldwork on custom activities concerning spiritual ecology in the village of Baishanzu Town, Qingyuan. The focus was on the original ecological forest ecosystem preserved in the area. In addition, during the inspection, we observed the whole process of worshipping and pacifying mountain spirits, Yinshu spirits, and Shu-niang spirits. The insiders included 32 villagers (including 3 mountain guides) and 3 staff from Baishanzu Town Cultural Station.

In 2020, due to COVID-19 prevention and control, the research team used communication and e-mail to obtain follow-up materials that needed to be supplemented by the relevant departments of Qingyuan.

### 2.2.2. Method of Investigation

The field-investigation activities were carried out by this research team in Qingyuan adopting different methods of interview and investigation according to the local conditions. The main methods were as follows:



The first was a structured interview. This is an open interview method commonly used in anthropological surveys. This method is characterized by asking the same questions in the same order for each respondent, thus ensuring that the results of different respondents' responses have comparable information or data for academic research. Structured interviews also have the advantage that they can take the form of individual interviews, focused interviews, and conference interviews. The practice in Qingyuan showed that the structured interview method was easier to obtain authentic folklore information on spiritual ecology from older mushroom farmers with lower education levels. The face-to-face interview brings a closer emotional relationship between the main interviewer and the interviewee and has good interactivity, making it popular in the actual survey. Its disadvantage is that it consumes more labor, money, and time.

Semi-structured interviews are sometimes used depending on the content of the interview. A relatively rough outline of the interview was drawn up in advance, and only rough answers were required for the respondents. This method was frequently used by the research team for folklore interviews on spiritual ecology, with the aim of obtaining qualitative types of folklore information on spiritual ecology. The interviewees were mostly indigenous elderly people, and their answers were organized into individualized qualitative data. Most of the questions asked were about the content of folk activities in the village. For example, what folk activities are held in the village every year? Who will organize these activities? Who are most active in the activities? What do you want to get back from these activities? What are the wishes and demands? etc.

Questionnaires, which are inexpensive to operate and which have a large number of respondents, were not used in this study. The reason for this is that the study area was limited to the territory of Qingyuan County and the relative number of interviewed individuals was not very large. In addition, the local groups participating enthusiastically in the activities of respecting and pacifying the Spirits were mostly middle-aged or elderly farmers, and, as a whole, they have certain obstacles to the reading and operation of online questionnaires or paper questionnaires.

### 2.2.3. Content of Investigation

This study used a combination of theoretical approaches from four related disciplines, namely, philology, ecology, anthropology, and folklore, to obtain research materials on the real situation of Qingyuan's spiritual ecology.

A literature approach to retrieving historical records of the Qingyuan forest-mushroom system was used. The Duohua method of the mushroom-cultivation technique in Qingyuan was initially passed down in a secret way among the people. In 1209, the technique of artificial cultivation of mushrooms was written into Longquan County Annals by Dan He, a native Longquan author. This is the earliest record of the artificial cultivation of mushrooms. By using 185 Chinese characters, the author depicted the operational steps of Duohua, including site selection, cutting, Duohua, management, and picking and baking. In 1313, Wang Zhen Agricultural Book contained 150 words describing the technique of growing mushrooms. Dan He's 185-character description as mentioned above was transcribed in Miscellaneous Records of the Peas Garden by Rong Lu (1436–1497), a native of Zhejiang in the Ming Dynasty, *Guangdong General Annals* compiled by Zuo Huang (1490–1566), a native of Xiangshan in Guangdong, and *Guangdong General Annals* recompiled in 1731. By looking up ancient books, the authors identified the origin and spread of the artificial cultivation of mushrooms in China over a period of more than 500 years, from 1209 to 1731. At the beginning of the 20th century, the local sage Yaoting Ye compiled the cryptic words into a common vernacular verse, named the *Complete Book of Mushroom*, which was printed by Zhejiang Xu Tongfu Lithographic Publishing House in 1924. From the "decoded" Complete Book of Mushroom, we can see that the Duohua technique of Qingyuan mushrooms is a very large and delicate knowledge system, in line with the scientific principle of strain growth and sustainable utilization to a large extent.

An anthropological fieldwork approach to obtaining information on folk practices was used. Using anthropological theoretical methods to conduct a field survey on spiritual ecology in Qingyuan, the authors obtained important information in three aspects. First, through structured interviews with local people from different social-strata classes, the reality of local spiritual ecology was recorded. Second, an in-depth interview was conducted with Mr. Wu Xiaojun, the 26th-generation direct descendant of Sangong Wu who was the originator of mushroom cultivation. Mr. Wu, who is both the heir of a mushroom family and current deputy county governor, in charge of the mushroom industry, dictated a significant amount of information about his family legend, mushroom production, and spiritual ecology. Third, several semi-structured interviews with local mushroom farmers were useful for understanding the customary origin of the spiritual ecology practice and its beneficial effect on mushroom production. Through field-research and interviews, the customary rituals of spiritual ecology, which were sealed in the depths of history, were presented.

An ecological approach to obtaining information on local forest resources was used. Scientific investigation of forest ecology by adopting an ecological approach yielded a significant amount of information related to spiritual ecology, the sustainable use of forest resources, and biodiversity conservation. The tradition of respecting and pacifying forest spirits actually has the function of ecological protection in nature reserves and national parks promoted by many countries in the world today [33]. In addition, through scientific investigations of ecological methods, we also elicited some important data on the local forest ecosystem. We found the types of trees and their community structure, as well as the types of mushroom-growing trees and their local distribution. We also found the protection of water resources related to spiritual ecology practices, the traditional knowledge of biodiversity protection, the cycle of natural forest regeneration, and its necessary conditions, etc. These are the first-hand materials for studying the historical evolution and practical value of spiritual ecology.

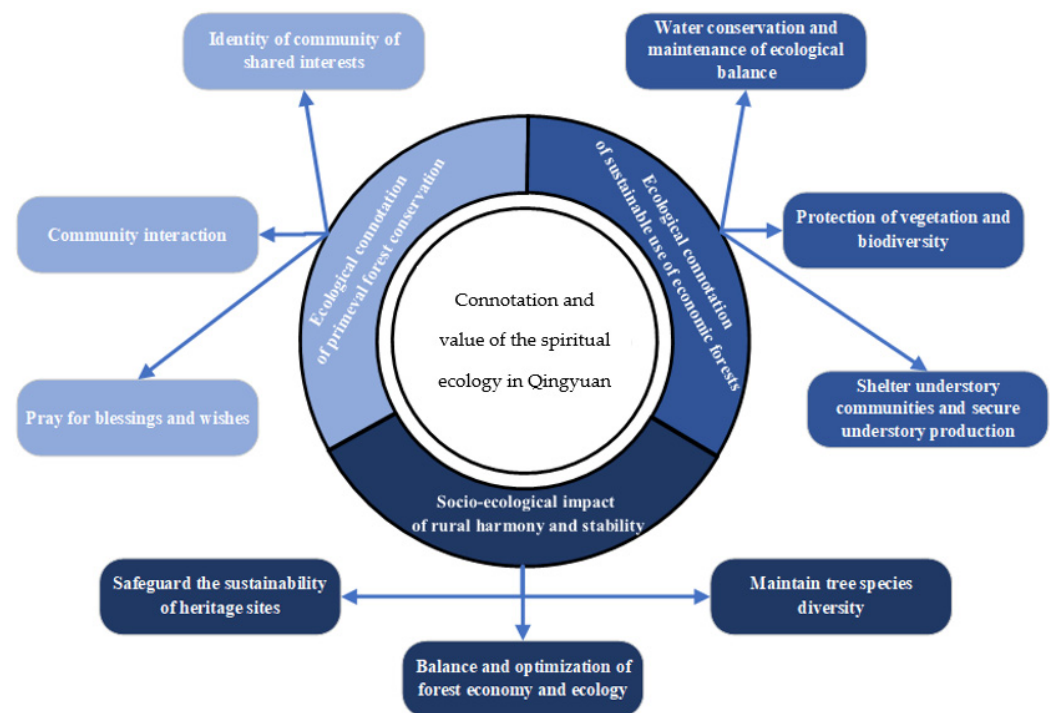
A survey approach to obtaining information on ritual activities in indigenous knowledge systems was used. The application of the folklore approach to field studies of spiritual ecology has also yielded new findings. The first is to reveal that the spiritual ecology practices in Qingyuan show strong cohesive power for the identity of the residents in a community. In traditional society, mushroom growers cultivated mushrooms in the remote mountains for many years. Some mushroom farmers have followed their elders into other distant countries since they were very young, going to those places in the spring and coming back in the autumn. Before the farmers grow mushrooms, they must first go to the mushroom forest to pray to the tree spirits. After harvesting the mushrooms, they must also go to the mountains to redeem a wish to the spirits. After the mushroom harvest, various villages hold grand temple fairs to share the joy of the harvest with the spirits. The temple fair is under the responsibility of the village chief, the “Final Leader,” who invites county sages to organize the fair. During the temple fair, tens of thousands of mushroom farmers came to participate, presenting an atmosphere of identity recognition among mushroom people. This religious festival is not only a collective celebration but also a social place where information is shared.

### 3. Results

The ecological connotation and practical value of the spiritual-ecology practices in Qingyuan, Zhejiang Province have a close relationship with each other. Through different forms of spiritual-ecology activities, a strong internal constraint has been formed among rural residents and is externally expressed as a conscious action to love mountains and protect forests. This enables the natural renewal and sustainable use of forest trees and forms a set of indigenous forest cultural knowledge and management experience, which meets the requirements of ecosystem biodiversity. The previous research on spiritual ecology and forest culture focused more on “prayer for blessings” and “avoidance of

disasters.” In recent years, the field of vision has been expanded, and more research results have included the role of ecological civilization.

With the deepening of field investigations, this research revealed that Qingyuan’s spiritual-ecology customs can be divided into Feng shui spirits, Gushan spirits, mountain spirits, Yinshu spirits, and Shu-niang spirits. The practice related to Shu-niang spirits refers to the worship of Shu-niang and the selection of a ginkgo tree as the object. With different customs, beliefs, taboos, and functional orientations, they together constitute the rich connotations and multiple values of Qingyuan residents’ spiritual ecology (Figure 4).



**Figure 4.** Connotation and value of the spiritual ecology in Qingyuan.

### 3.1. Ecological Connotation of Feng Shui Spirits on the Conservation of Primeval Forests

In spiritual-ecological beliefs, there is a custom to respect and appease the spirit of Feng shui. This prompted the group consciousness of Qingyuan ancestors to preserve the primeval forest, and thus the important rivers in Zhejiang Province have been protected. The primeval forest referred to here is a complete biosphere that remains in its natural state and has not been destroyed by man. Feng shui Forest in Qingyuan area is the core of the terrestrial ecosystem. The Feng shui forest in Qingyuan is a pristine forest untouched by human beings. The sources of local rivers such as the Oujiang River, the Minjiang River, and the Saijiang River have their headwaters from the Peak Forest Area of the mountain Baishanzu, located in Qingyuan. Since ancient times, the Peak Forest Area in the Baishanzu Mountain has always been an area where Qingyuan people’s awe and the comfort spirit resides, and it has been protected by strict religious rules. Through fieldwork, we found that the local folklore is not the worship of trees but the worship of the spirit of awe and comfort living in forests or trees. Because of this, the riparian areas and watersheds of these three rivers maintained a good pristine ecology.

The ancestors of Qingyuan believed that the Feng shui spirit lies in the Feng shui forest, so it needed special protection to express their respect and appeasement for the Feng shui spirit. The origin and spread of this custom are closely related to the way they chose to use the land. As they eventually chose the production model of forest economy, they had to balance economic income with forest conservation. A virtuous cycle of synergistic co-existence of agricultural resources can only be achieved if forest ecosystems are well protected. Long-term production practice has made them realize that the model of growing

mushrooms under the trees in Qingyuan is more conducive to maintaining the balance of the ecosystem. This mode adapted to the method of making a living in the mountainous environment and has also constituted the technical orientation of learning about nature, adapting to nature, and using natural resources, thereby ultimately achieving the harmony and unity of maintaining forest ecology, agricultural ecology, and human-habitat ecology.

A Feng shui forest offers a variety of functions: (A) the ecological function of conserving water and maintaining ecological balance; (B) the biodiversity function of protecting vegetation and providing an animal habitat; (C) the economic function of shading the forest community and securing forest production. Feng shui forests are usually set aside on hills at the edge of villages and beside the water sources, or in places of special significance in villages, such as places near the temples and the ancestral halls. Figure 5 shows an example of Feng shui forest.



**Figure 5.** Feng shui forest in its natural condition.

The Chinese “Feng shui forest” actually includes three morphemes—“wind,” “water,” and “forest”. This is a very rich concept. Feng shui forest helps to understand the value of local forests and how local communities use traditional knowledge of forest resources. It retains some indirect use of traditional knowledge; maintains spiritual and cultural continuity; maintains inter-generational connections and environmental-management knowledge and skills; and cultivates local attachment [34]. According to field investigation, almost every hill in Qingyuan has a Feng shui forest where logging and grazing are prohibited, and there is a Feng shui forest on the hill or along stream in every village, which is set aside for strict protection. Usually, a water source with dense tree growth is chosen as a Feng shui forest. For one thing, it can be served as a green belt barrier of the village, for another, it plays a role of ensuring a clean and lasting flow of water for the village. We showed the distribution of major Feng shui forests in Qingyuan in Figure 6.



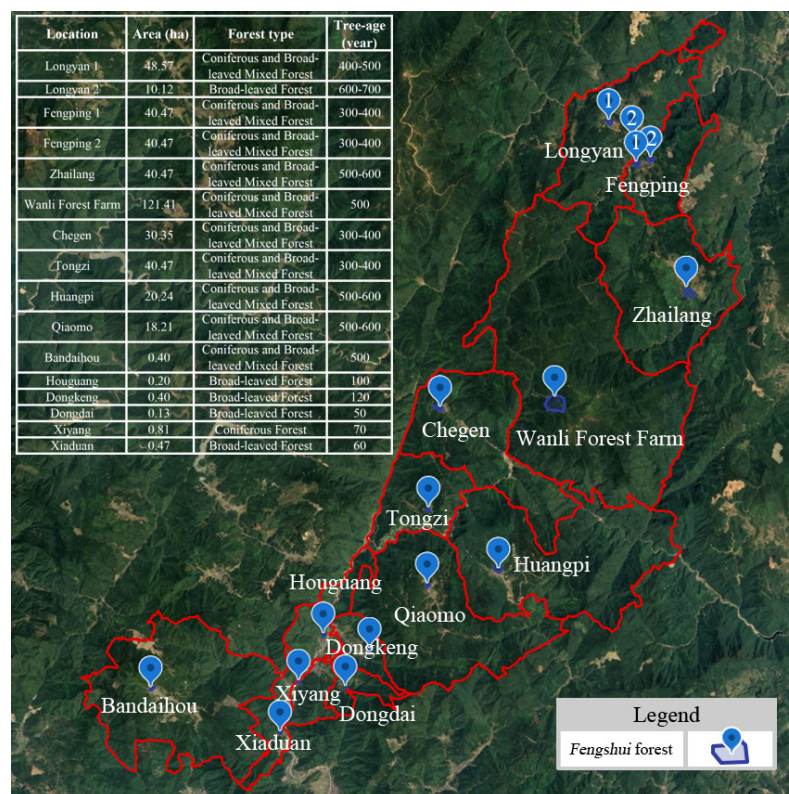


Figure 6. Distribution of major Feng shui forests in Qingyuan.

In order to protect the Feng shui forests, there are also many conventional local township regulations, the most common prohibitions of which are as follows: (1) Cutting trees, burning charcoal, cutting firewood, and sawing wood in the Feng shui mountains and forests are prohibited. (2) Grazing livestock in the Feng shui forests, especially cattle, sheep, or other herbivorous animals are not allowed in case of damaging small trees in the forests. (3) Getting building materials and stones from the forest or digging soil in the Feng shui forests are prohibited, so as not to damage the original surface vegetation and the original landform. Local residents have been consciously observing these township rules and regulations, so that the vast mountain forests have been well protected as their original conditions, and the natural biomes and landscapes have been maintained. Currently, all areas in Qingyuan have been listed as the priority for the construction of the national park cluster in the southern Zhejiang Province.

Such excellent forest heritage benefits from the ecological effect of primeval forest protection produced by the Feng shui forest belief.

### 3.2. Ecological Connotation of Gushan Spirits to Economic Timber Forests

Gushan spirits have a different residence from the aforementioned Feng shui forest spirit. The Feng shui forest spirit lies in the primeval forest, while the Gushan spirits lies in the economic forest where mushrooms are grown. Villagers have been cutting trees in the forests to grow mushrooms for generations. Every year before they cut trees and grow mushrooms in the mountain, they will hold a grand ceremony to pray to and appease the Gushan spirit. This is a custom of deifying nature and a way to adapt to the natural environment, which contains profound ecological conservation wisdom.

The belief in spiritual ecology is conducive to the development of the concept of “loving and nurturing the mountains, knowing and using the mountains,” thus transforming the spiritual constraints of religious beliefs into norms of production and life. When the people of Qingyuan hold ceremonies to appease the mountain spirits, the ancestor’s mushroom-planting doctrines are usually preached by respected clan elders. There are as many as 20 species of trees to grow mushrooms mentioned in the “Mushroom Song,”

an oral song that has been passed for generations. The diversity of tree species growing mushrooms can avoid excessive logging of a single species, help to maintain the diversity of forest species, and reflect the excellent ecological economic principle of “balance the use and maintenance, and adjust measures to local conditions” [35]. In addition, the doctrine to appease the Gushan spirit also includes the instruction of “intermittent cutting to use woods lastingly.” The way of “intermittent cutting” can prevent overcutting of a single species and of part of the local forest land so that the forest can renew and flourish naturally, and the ecological goal of sustainable use can be achieved.

In every ceremony of the Qingyuan people to appease the Gushan spirit (Figure 7), the chief priest will recite the township rules of loving the mountains and protecting the forests. This is the local rule that promotes the endless mushroom industry. The recitation text includes “three prohibitions on the Gushan mountain,” no poisoning, no shooting with muskets, and no killing of birds and animals in the mountain and forest. This is a common law followed by mushroom farmers throughout the generations.



**Figure 7.** Appeasing the Gushan spirit.

### 3.3. Mountain Spirits' Protection of Biodiversity

Qingyuan mushroom farmers also have the custom of pacifying mountain spirits. In folklore, mountain spirits are the gods in charge of the forest and beasts. Many ethnic groups around the world have the custom of venerating and pacifying mountain spirits [36]. Mountain spirits are sometimes represented by or inhabit an ancient tree, rock, or cairn that resembles some kind of fierce beast [37]. In some forests where there are no suitable trees or stones, a mound piled up artificially that is endowed with divine authority can be deified as mountain spirits, which is called “Xiao An” in the Qingyuan dialect. Mountain spirits usually live at the entrance to the mountains. Therefore, people who go into the mountains to grow mushrooms must pass the “Xiao An”; so, they must stand in front of it to express their pious respect and appeasement, which is called “Guo Dan” in the local dialect (Figure 8).



**Figure 8.** Mountain spirits: “Xiao An” (the rock in the red circle of the picture was built by hand).

Pacifying mountain spirits expresses the reverence and gratitude of the mushroom farmers for the forests. The ancestors of Qingyuan believed that mountain spirits are in charge of everything in the forests. People put various hopes and demands on mountain spirits. This local prohibition of chthonic belief is conducive to the forest protection and the maintenance of mountain ecology. The villagers have been living in the mountain areas for generations, and the source of their livelihood comes from the forests. They grow mushrooms, pick wild fruits and vegetables in the forest, and reclaim lands to cultivate rice besides the forests. Even the daily herbs for disease prevention and treatment are picked from the mountains. Pacifying mountain spirits expresses people's complex feelings for the capricious nature such as reverence, obedience, love, gratitude, appeasement, and hope (Figure 9).



**Figure 9.** Ritual of the villagers to appease mountain spirits.

The custom of appeasing the mountain spirits has maintained the flourishing forest ecology and the natural state of the forest system, as well as the biological ecology of the rich forest environment for growing mushrooms; and has formed a simple sense of protecting the environment and sustainable use of resources; and has left room for the animals, plants, and microorganism in the local forests. It has also effectively protected the ecological environment and biological diversity, showing a simple thought on ecological protection.

### 3.4. The Influence of Shu-Niang Spirits on Rural Harmony and Stability

The spiritual ecology that is exemplified in Qingyuan also includes the custom of recognizing the Shu-niang (recognize a tree as “one’s mother”). It does not aim at the whole forest or mountain peaks but a single tree, which is the tree spirits.

In the traditional custom of Chinese childcare, there is a child-rearing ritual called “Jiming” [38]. That means that a child is taken to a temple and formally recognized by a monk or nun as a master in order to make the child grow up healthy after his/her birth, but the child is not ordained as a monk or nun. In Qingyuan, however, “Jiming” is not to recognize the monks and nuns as teachers but to “recognize the Shu-niang.” This is an extension of the custom of “Jiming,” and it is a folkloric expression.

The ancient custom of having a newborn baby recognizing an old tree as Shu-niang is the reason why there are large, old trees in many villages. These old trees, specifically camphor and banyan trees, alongside the villages are deeply rooted in the soil and covered with thick shade, with lush branches and leaves, showing vigorous vitality. The people of Qingyuan are mainly engaged in the mushroom industry and have a deep affection for trees. They put their children in the shelter of trees, because in the villagers’ mindset, ancient trees contain the essence of the heaven and the earth, which are kind-hearted and benevolent, so they enable children to avoid evil, dispel diseases, and grow up in good health.



For the ceremony of recognizing the Shu-niang (Figure 10), candles, prayer flags, wine, and delicacies are usually prepared. A red paper with the child's birth time written on it, together with a little tea and rice, is put into a small red cloth bag and hung on the tree, and the flags are written with the date of acknowledgement, the name of the child, and a blessing, such as "a long life of abundance and respectability" and "treasures fill the home"; then, the ceremony of recognizing the Shu-niang is held.



**Figure 10.** Recognizing the Shu-niang (each red ribbon on the tree is the trust of a child). Recognizing the Shu-niang means to take a tree as "a mother," which is nominal.

It is important to point out that the custom of recognizing the Shu-niang actually has a practical value in daily life. Young parents often choose famous old trees around the village as the Shu-niang to entrust their children. Since there are not many old trees in the village, each tree becomes the "mother" of many children. A few famous old trees are even recognized by children brought by their parents coming from remote places who are attracted by reputation. Thus, through the convention of "Recognizing the Shu-niang," each old tree may gather into "children groups" and "parents groups" with a large number of people. In daily life, people also share information and get to know and help each other through the "Shu-niang groups." The function of Qingyuan's "Shu-niang groups" is similar to that of the contemporary Internet "circle of friends."

### 3.5. The Pursuit of a Better Life by Yinshu Spirits

Yinshu spirits are the spirits in charge of wealth, and it is a belief custom formed with mushroom production. "Yinshu" in Chinese is "The tree of silver." There is no specific species of Yinshu that the villagers place hopes on but the one they think can make them rich. It is usually a familiar tree species that they usually use to grow mushrooms. Yinshu spirits need to be moved respectfully from the mountain back in front of their houses, with red cloth around the trunk and kept there until the Lantern Festival. Reverence of Yinshu spirits is to pray for "a good harvest of mushrooms and big fortune" (Figure 11).

The practice of Yinshu spirits also includes the rite of "requiting favors and redeeming a wish." The folk meaning of the custom of venerating Yinshu spirits and returning the favor is that because of the care of Yinshu spirits, they can obtain wealth and interests, so they must return the favor in time. There are many ways of favoring the spirits. For example, donations are made for the renovation and expansion of temples; for the purchase of offerings for holding temple fairs; donations are made to mushroom business chambers for funding young mushroom farmers to start their own businesses; and donations are made to the villagers' organizations for the livelihood of the widows, orphans, the sick, and the disabled and for the tuition fees of poor children in the village. For example, Qingyuan is located in a mountainous area, so the villages have to cross mountain streams when going out, which requires the construction of a large number of "corridor bridges."



There are more than 100 corridor bridges built and preserved through the ages. Most of the funds for the construction, repair, and maintenance of these corridor bridges come from the donations for favoring the Yinshu spirits. Such donations are common in the Qingyuan area.



**Figure 11.** A villager appeasing the Yinshu spirit inhabiting the tree in order to obtain Yinshu.

Long-term production practices have proved that Qingyuan's spiritual ecology is conducive to maintaining the biodiversity and sustainability of the forest area and nurturing a unique "forest-mushroom co-cultivation system" agricultural heritage. Its uniqueness is that for more than 900 years, local residents have used forest resources to grow mushrooms, and the forest system is not deteriorated or declined due to mushroom cultivation. The reason behind this is the positive effect of spiritual ecology. It enables the forest economy and forest ecology to achieve a dynamic balance and progressive optimization, ensuring the sustainable development of mushroom cultivation.

#### 4. Discussion

The example of Qingyuan's spiritual ecology may help define a broader, richer, and more diversified concept of agricultural heritage, and it may help expand research horizons on the relationship between religious beliefs and ecological environmental protection [39]. Modern people are rapidly destroying the natural world in which they live, resulting in modern diseases that cannot be effectively cured. The situation is the same everywhere on earth. Forests are cut down, wetlands are drained, coral reefs are dug up, and farmland is eroded, resulting in salinization and desertification. Pollution is now widespread—our groundwater, streams, rivers, estuaries, oceans, the air we breathe, and the food we eat are all affected. Almost every organism on the planet contains traces of agricultural and industrial chemicals, many of which are known or suspected carcinogens and mutagens. Under such circumstances, we need to reflect on the practical significance of the spiritual ecology in history. We need to focus on the acquisition of livelihoods, the meaning of residence, and the nature of skills and weave together anthropology, ecology, development biology, and phenomenology in an unprecedented way, revealing how animism affects humanity and the relationship between non-human animals [40].

In the past 20 years, the Kunming Institute of Botany, Chinese Academy of Sciences, China, conducted an anthropological field survey on the biodiversity, cultural diversity, and the value of sacred forests in Yunnan minority areas using ethnobotanical methods. They found that the Dai people believe in the concept of animism and were closely related to the natural world. The relationship between the Dai people and the natural environment is composed of five elements: forest, water, land, food, and human beings. They believe that forests are the cradle of mankind. Water comes from forests; land is supplied by water

and rivers; and food comes from land. Therefore, human life is ultimately supported by forests, and forests and supernatural spiritual ecology are integrated [3].

The Best Practice Guide for the Cultural and Spiritual Significance of Nature in the Governance and Management of Protected Areas put forward by the World Commission on Protected Areas (WCPA), Gland, Switzerland funded a project on “the cultural and spiritual significance of nature in conservation” paying special attention to “the relationship between human and environment and between nature and politics.” The research report pointed out that the conservation of natural resources in the 21st century should focus on how to integrate all species, transform protected areas into semi-natural agricultural or urban land, and extend many people’s care for parks to various places.

China is a country with the largest biodiversity in the world, with rich ecosystems and vegetation types, as well as rich genetic diversity. China is very rich in plant species. There are more than 30,000 native Chinese plants, of which 7500 are native Chinese trees and shrubs [41]. The forest protection tradition similar to Qingyuan is the cultural and customary basis for the formation and maintenance of China’s biodiversity.

#### *4.1. The Effect of Spiritual Ecological Custom on the Sustainable Maintenance of the Forest–Mushroom Co-Cultivation System*

Qinyuan’s case of spiritual ecology can help to define a broader, richer, and more diverse concept of agricultural heritage, which helps to expand the research horizon on the relationship between religious beliefs and ecological environment protection. The diversity, complexity, and functional pluralism of Qingyuan’s spiritual ecology reflect the national characteristics of peoples living by forests who value cultural traditions, abide by customary institutions, and respect the natural environment. The characteristics of forest culture in the forest–mushroom co-breeding system can be summarized as that “the essence of culture is dynamic, regional, and national” [42]. Qingyuan’s spiritual ecology has some similarities with the traditional management measures of the Andean Mapuche Pewenche people for the araucaria forest [43,44].

The countryside of Qingyuan is undergoing an unprecedented “traditional-modern” social transformation. The natural and humanistic environment on which spiritual ecology depends have undergone drastic changes. The mushroom-production technique of the Qingyuan people has been upgraded from the original Duohua method to the log-cutting, substitute-cultivation, and intelligent-integration methods [45]. The progress of civilization with the advancement of science has transcended the stage of folk beliefs of the Age of Ignorance. Industrialization, urbanization, and globalization have irreversibly reconstructed the organizational system, production modes, and cultural forms of the countryside. However, unlike many parts of the world where traditional culture has quietly receded from the historical stage in the process of social transformation, the belief of Qingyuan’s spiritual ecology has contributed positively to the development of local sustainability.

#### *4.2. The Contemporary Value of the Forest–Mushroom Co-Cultivation System Derived from Spiritual Ecology*

The case study of Qingyuan shows that the traditional and modern aspects of agricultural heritage are not antagonistic and isolated but that both can be continued or linked in the process of modernization, forming a specific material or immaterial structure. It can be seen from the custom of Qingyuan’s spiritual ecology that the material elements that make up forest culture usually evolve in concert with technological progress, but the non-material cultural elements that make up forest culture, that is the spiritual elements, will continue to flow in the long river of civilization and have eternal value. Specifically, Qingyuan’s mushroom-cultivation techniques, production tools, raw materials for mushroom planting, and processing equipment, etc. will change and upgrade, but the ideological core of preserving the forest, protecting the environment, revering nature, and co-cultivating forests and mushrooms, which is followed by spiritual ecology, will not only remain unchanged but will also continue to sublimate and develop in some aspects thanks to the civiliza-

tion progress. It is through the effective “traditional-modern” linkage that the mushroom industry in Qingyuan has continued to achieve great development.

The contemporary value of the forest–mushroom co-breeding system derived from spiritual ecology by the ancestors of Qingyuan is mainly manifested in three aspects. First, local people use forest resources to develop edible mushroom industry to make a living while preserving the original ecological environment of the forests to ensure sustainable utilization of forest resources and sustainable forest-ecosystem service functions. The traditional mushroom-cultivation techniques generated by the mushroom farmers when choosing to cultivate edible mushrooms in the forests are not only a livelihood skill to adapt to the mountainous environment but they also constitute the core technology to understand, adapt to, and make use of nature, and there is a guarantee to maintain the harmony and unity of forest ecology, agricultural ecology, and habitat ecology.

Second, the mushroom farmers’ workplace reflects the traditional Chinese culture’s simple view of nature: what is taken from heaven and earth is returned to heaven and earth. The mushroom shacks built by local mushroom farmers (farmers’ houses and mushroom-baking rooms) and the mushroom sheds used for edible mushroom production today are obtained from local sources with minimal use of modern building materials. After the mushroom shacks and mushroom sheds are abandoned, the materials will decay and degrade on their own, returning to nature and becoming nutrients for the growth of the forest again.

Third, when mushroom farmers cut down trees, they strictly adhere to the technical principles of “cutting the old and leaving the new, cutting the dense and leaving the sparse, performing intermittent cutting, and changing the site,” thus reflecting the superb ecological wisdom of harmonious coexistence between man and nature.

#### *4.3. Spiritual Ecology Has the Universality of All Nations in the World*

We note that Professor Marvin Harris of the University of Florida, Gainesville, FL, USA was invited to the 12th annual meeting of the American Behavioral Association on 23 May 1986 to speak on “Cultural Materialism and Behavioral Analysis: Common Problems and Fundamental Solutions.” In his lectures, Harris repeatedly emphasized that cultural materialism is different from dialectical materialism, but they share a common view that the production process of material life determines social, political, and spiritual processes. Cultural materialism has always opposed the simplistic view of causality [46].

Archaeological reports in Central Europe and North America show that some large trees submerged in water since the 6th century have various signs carved on their trunks, and they are thought to have been carved when they were alive. These symbols left on the tree may be used to mark certain rights or memories, such as the boundaries of land and resources, wishing from prayer, worshiping gods, thanking the tree gods, etc. [47]. Although the true meaning of the symbols carved by the aboriginals of Central Europe and North America since the Middle Ages has not been verified, we believe that these symbols are consistent with the blessing function of the custom of recognizing the Shu-niang in Qingyuan. In a book depicting European symbols and ritual plants with both pictures and texts, the large tree similar to Qingyuan’s Recognizing the Shu-niang is called “the ritual plant in daily life.” It also represents “ancient symbols, myths and the symbolic meaning of rituals” [48].

Custom beliefs in the Middle East hold that trees are the residence of supernatural creatures, protecting the village and taking care of its prosperity. In the entire Muslim world, rain-making rituals are performed in the shrines of saints because the sacred tree is considered to be the abode of the soul of the saint. Sacred trees and rain-making rituals can be seen in almost every village in Israel [49]. In addition, in Israel, the sacred woods or forests are the center of official worship in the community. The sacred tree has supernatural characteristics and powers. Any violation of trees is considered a threat to the health of the community. Therefore, the punishment may be collective [50].

In Zimbabwe, soldiers on the battlefield believe that snakes with souls need to be protected; so, even in military deployment areas, snakes will not be killed because they are sacred. Soldiers are not allowed to use soap while bathing in swamps or rivers, because these waters are the territory of mermaids and elves and cannot be contaminated by soap liquid [51]. One important aspect of the spiritual ecology of Bhutan is characterized by the way in which indigenous people contribute knowledge. Both political ecologists and wildlife scientists recognize that the dimensions of morality and sacred life may help us understand the biophysical world and the place of humans in it [52].

The above examples all show that spiritual ecology is universal in the world. In Europe, there are over a thousand plants of symbolic and ceremonial significance. Shrubs and trees in mythology and religion are symbolized through various secular rituals. Customs that we once considered perfectly normal have a long history of meaning [53].

An anthropological study of Shangri-La, Diqing Tibetan Autonomous Prefecture in Yunnan Province, found that the traditions of indigenous societies can help achieve modern (environmental) protection goals. It includes scientific concepts and practical examples of ecology, hydrology, biodiversity, and other environmental protection [54].

In the entire Qiang area, each village worships its own mountain gods, and the dates and rituals for each village to worship the mountain gods are also different. Generally speaking, the farther away the villages are from towns and main traffic lines, the easier or more necessary it is to maintain this traditional mountain worship activity [55].

In the Dai region of Yunnan, ceremonies related to sacrificial offerings to the holy mountain have many uses. First of all, these rituals are prayers for the protection, harvest, and health of the gods. Second, they strengthen the political and social hierarchical space political organization by organizing social behavior. The sacred mountain is considered to be the behavior leader of the Dai people and resides in the sacred forest at the same time. Third, as the focal point of definition, the membership and social status of individuals in specific villages and Meng Mountain, they can also become public members of related communities. Finally, the rituals related to this legitimize the existence of the community, because the ritual can be performed as long as the community exists [56].

The two main peaks of the Himalayas, Mount Everest and Mount Gaori Shankar, are associated with the five famous goddesses of Tibet—the Five Sisters of Longevity—but the Sherpas do not have universal worship for them. The gods in these places are usually benevolent, but they can also be offended, causing illness and other misfortunes. The collective rituals of the villagers involved protecting the village, crops, and cattle from evil spirits, as well as the general welfare of the village community.

## 5. Conclusions and Insights

The practice of spiritual ecology, which started as a spiritual solace, has gradually evolved into a forest-cultural resource shared by community groups [57]. The value logic of forest culture lies in the fact that the prosperity of villages and the flourishing growth of Feng shui forests can be traced through the same origin. This exhorts people to consciously protect specific sacred forests in real life, and it plays a secular and practical value in maintaining ecological excellence. Such practical value will prove the necessity and validity of a belief in cultural logic and then strengthen the inheritance of belief and folk customs. In the whole virtuous cycle, the realization of the secular value function is always the power source that governs the inheritance and development of faith. It is for this reason that the practice of Qingyuan's spiritual ecology has kept with the times in the course of modernization and has continued to show its excellent endowment of resilience and sustainability.

The case study of Qingyuan shows that the ancestors of Qingyuan regulated people's behavior through the beliefs of spiritual ecology, which implicitly created the value pursuit and cultural potential of "loving and nurturing the mountains" and advanced from the spiritual level to the production and life level. The customs of Qingyuan's spiritual ecology contain a long history of folk culture and have gone through the accumulation of



vicissitudes of life, forming a solid ethnic memory and reflecting the identity power of the “customary identity, ethnic identity, and regional identity” of the community of interest [58]. A series of stable folk customs, taboos, rural regulations, and folk conventions have been formed to protect forests, stabilize water conservation, and maintain the ecological function of biodiversity, and they have a positive effect on maintaining the sustainable development of the heritage system. It still has a strong vitality and cohesiveness in today’s increasingly modernized world. This is the precious historical inspiration left to the world by the spiritual ecology of the ancestors of Qingyuan.

**Author Contributions:** Conceptualization, Q.M. and G.Z.; methodology, G.Z.; formal analysis, Q.M. and G.Z.; investigation, Q.M., G.Z., B.W. and K.Z.; writing—original draft preparation, G.Z.; writing—review and editing, X.C.; supervision, Q.M.; funding acquisition, G.Z. and Q.M. All authors have read and agreed to the published version of the manuscript.

**Funding:** The International Exchange and Cooperation Project of the Ministry of Agriculture and Rural Affairs “Protection of China’s Important Global Agricultural Cultural Heritage in 2020”; the project “Protection and Inheritance of Important Agricultural Cultural Heritage” funded by the Department of Rural Social Undertakings of the Ministry of Agriculture and Rural Affairs; Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences in 2019 Research project “The Ecological Origin and Contemporary Value of Folk Culture of Zhejiang Qingyuan Traditional Mushroom Cultivation System” (070HY0063).

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of Institute of Folklore, Nanjing Agricultural University (MSS(2012)11-8, 15-11-2012).

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data are also available from the author Guannan Zhu (zhuguan-nan@njau.edu.cn) upon reasonable request.

**Acknowledgments:** Thanks to the Ministry of Agriculture and Rural Affairs of China, the Chinese Academy of Sciences, and the People’s Government of Qingyuan County for providing financial support for the project; to people from all walks of life in Qingyuan for providing good on-site services for the academic investigation; and to the Bureau of Agriculture and Rural Affairs of Qingyuan County for authorizing the use of the photographs in the manuscript.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

- Hua, T.J. Examples of Ecological Balance Destruction and Prevention measures in Foreign countries. *Geogr. Transl. Dly.* **1982**, *10*, 20–21. (In Chinese)
- Sponsel, L.E. Spiritual Ecology. In *Encyclopedia of Psychology and Religion*; Leeming, D.A., Ed.; Springer: Berlin/Heidelberg, Germany, 2016.
- Verschuuren, B.; Wild, R.; McNeely, J.A.; Oviedo, G. *Sacred Natural Sites: Conserving Nature and Culture*; Earth Scan, Routledge: New York, NY, USA, 2011; Volume 39, pp. 389–390.
- Ma, T.; Min, Q.W.; Xu, K.; Sang, W.G. Resident Willingness to Pay for Ecotourism Resources and Associated Factors in Sanjiangyuan National Park, China. *J. Resour. Ecol.* **2021**, *12*, 693–706. (In Chinese)
- Hou, P.; Liu, P.Y.; Rao, S.; Tian, J.L.; Zhu, Y.P.; Xiao, R.L.; Jiang, W.G. National Park: Inheritance and Innovation of China’s Nature Reserves. *Environ. Ecol.* **2019**, *1*, 1–7. (In Chinese)
- Hu, W.F.; Zhang, Y.X.; Wang, W.Q.; Min, Q.W.; Zhang, W.L.; Zeng, C.S. Landscape Characteristics and Utilization in Agro-cultural Heritage Systems in Lianhe Terrace. *Zhongguo Shengtai Nongye Xuebao/Chin. J. Eco-Agric.* **2017**, *25*, 1752–1760. (In Chinese)
- Zhang, Y.X.; Liu, M.C.; Min, Q.W.; Lun, F.; Zhang, C.Q. Environmental Adaptability and Service Functions of Chinese Jujube Forest Ecosystem in Jiaxian County, Shaanxi Province. *Arid Zone Res.* **2014**, *31*, 416–423. (In Chinese)
- Zhu, G.N.; Min, Q.W. Ecological Mechanism and Contemporary Values of the Forest-Mushroom Co-cultivation System in Qingyuan. *Agric. Archaeol.* **2020**, *6*, 37–43. (In Chinese)
- Zhu, G.N.; Min, Q.W. Historical and Cultural Rethinking on the Conservation of Agricultural Heritage. *J. Orig. Ecol. Natl. Cult.* **2020**, *12*, 130–135. (In Chinese)
- Studley, J. *Indigenous Sacred Natural Sites and Spiritual Governance*; Routledge: London, UK; New York, NY, USA, 2019.
- Verschuuren, B.; Brown, S. *Cultural and Spiritual Significance of Nature in Protected Areas: Governance, Management and Policy*; Taylor and Francis: London, UK, 2018.

12. Cayne, B.S. *The Encyclopedia Americana: The International Edition*; Grolier Incorporated: Danbury, CT, USA, 1981.
13. Douglas, M. Judgments on James Frazer. *Daedalus* **2015**, *107*, 151–164.
14. Kumar, V. To Walk Alongside: Myth, Magic, and Mind in The Golden Bough. *J. Ethnogr. Theory* **2016**, *6*, 233–254. [CrossRef]
15. Leach, E. Reflections on a Visit to Nemi: Did Frazer Get It Wrong? *Anthropol. Today* **1985**, *1*, 2–3. [CrossRef]
16. Frazer, J.G. *The Golden Bough: A Study in Magic and Religion*; The Commercial Press: Beijing, China, 2013; pp. 15, 137, 143–144.
17. Chen, B.P. On Flora and Tibetan Religious Belief. *J. Tibet Natl. Inst.* **2005**, *5*, 27–31, 106. (In Chinese)
18. Ni, Z. The Tree Worship among the Qiang. *J. Lit. Hist.* **1997**, *4*, 32–34. (In Chinese)
19. Zhong, S.L. On the Tree Worship in Bashu: A Discussion of Xiangru Sima's and Others' "Fugue's heart". *Soc. Sci. Res.* **1998**, *4*, 128–131. (In Chinese)
20. Fan, Y.Z. The Ecological Conservation Concept of Mongolian Tree Worship Practice. *J. West. Mong. Stud.* **2016**, *4*, 36–41, 127. (In Chinese)
21. Yeh, E. Shielding the Mountains. A Film about Tibetan Environmental Protection Traditions, Running Time: 20 Minutes, Language of Dialogue and Subtitles: Tibetan and Chinese; English Subtitles, 2010. Available online: <https://www.tibetsacredmountain.org/wp-content/uploads/ShieldingtheMountains-Study-Guide.pdf> (accessed on 30 September 2021).
22. Xu, J. An Experimental Study of Tree Worship. *Relig. Stud.* **1994**, *Z1*, 58–64. (In Chinese)
23. Gao, Y.X.; Zhu, Q.J. Terrace Culture and Ecological Civilization Construction of Hani Nationality in Yuanyang. *J. Southwest For. Univ. (Soc. Sci.)* **2017**, *1*, 21–24. (In Chinese)
24. Liang, Y.; Hu, Y.N.; Liu, M.C.; Min, Q.W. Study on The Conservation and Development Strategy of Agricultural Heritage of Ancient Jujube Garden in Jia County, Shaanxi. *Rural Econ. Sci.-Technol.* **2014**, *25*, 21–25. (In Chinese)
25. Colding, J.; Folke, C. Social Taboos: "Invisible" Systems of Local Resource Management and Biological Conservation. *Ecol. Appl.* **2001**, *11*, 584–600.
26. Moguel, P.; Toledo, V.M. Biodiversity Conservation in Traditional Coffee Systems of Mexico. *Conserv. Biol.* **1999**, *13*, 11–21. [CrossRef]
27. Dafni, A. On the Typology and the Worship Status of Sacred Trees with a Special Reference to the Middle East. *J. Ethnobiol. Ethnomed.* **2006**, *2*, 26. [CrossRef]
28. Wang, T.Q. The Worship of Sacred Trees in Ancient China. *J. Qinghai Norm. Univ. (Philos. Soc. Sci. Ed.)* **1995**, *2*, 23–27. (In Chinese)
29. Tang, X.P. National Park System Leads the Mainstreaming of Biodiversity. *For. Resour. Manag.* **2021**, *4*, 1–8. (In Chinese)
30. Wang, B.; Zhang, Q.Y.; Li, Z.C.; Min, Q.W.; Yao, S.C.; Zhang, Y.J.; Huang, S.Y.; Yuan, Y.N. Plant Species Diversity of Mushroom-cultivated Forest Community in Qingyuan County, Zhejiang. *Anhui Agric. Sci. Bull.* **2020**, *26*, 55–58. (In Chinese)
31. Li, B.L.; Pan, R.G. Landscaping Application Prospect of Wild Woody Plant Resources in Qingyuan County. *Mod. Agric. Sci. Technol.* **2010**, *6*, 194–195. (In Chinese)
32. Ye, B.Z.; Ye, B.M.; Pan, R.G. Medicinal Plant Resources and Development and Utilization Proposals in Baishanzu Reserve, Zhejiang Province. *Mod. Agric. Sci. Technol.* **2010**, *5*, 112–113. (In Chinese)
33. Negi, A.K.; Todaria, N.P. Studies on the Impact of Local Folk on Forests of Garhwal Himalaya. 1: Energy from Biomass. *Biomass Bioenerg.* **1993**, *4*, 447–454. [CrossRef]
34. Rowcroft, P.; Studley, J.; Ward, K. Eliciting Forest Values for Community Plantations and Nature Conservation. *For. Trees Livelihoods* **2006**, *16*, 329–358. [CrossRef]
35. Wang, R.X.; Li, F. Analysis of the Types of Based on Synchronic Study. *J. Beijing For. Univ. (Soc. Sci.)* **2019**, *18*, 16–19. (In Chinese)
36. Ping, N. Mountain God Worship and Nature Conservation. *China Nat.* **2000**, *2*, 36–37. (In Chinese)
37. Nie, J.X. The Worship of Mountain Sprite and the Identification of a Village: An Inspection of Mountain Sprite Religious Sphere. Ph.D. Thesis, Shanghai University, Shanghai, China, 2007. (In Chinese)
38. Wang, Q. On the Custom of Entrusting Names to Buddha in Children-Rearing and its Origin. *Stud. Folk. Texts* **2020**, *124–136*, 297–298. (In Chinese)
39. Berkes, F. Rethinking Community-based Conservation. *Conserv. Biol.* **2004**, *18*, 621–630. [CrossRef]
40. Ingold, T. *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*; Routledge: London, UK; New York, NY, USA, 2000.
41. Pei, S. Bio-cultural Diversity and Development of China's Western Provinces. *J. Grad. Sch. Chin. Acad. Sci.* **2002**, *19*, 107–115.
42. Ma, G.Q.; Zhu, W. *Cultural Anthropology and Intangible Cultural Heritage*; SDX Joint Publishing Company: Beijing, China, 2018; pp. 38–59.
43. Herrmann, T.M. Knowledge, Values, Uses and Management of the Araucaria Araucana Forest by the Indigenous Mapuche Pewenche People: A Basis for Collaborative Natural Resource Management in Southern Chile. *Nat. Resour. Forum* **2005**, *29*, 120–134. [CrossRef]
44. Herrmann, T.M. Indigenous Knowledge and Management of Araucaria Araucana Forest in the Chilean Andes: Implications for Native Forest Conservation. *Biodivers. Conserv.* **2006**, *15*, 647–662. [CrossRef]
45. Gu, X.G.; Lai, Q.X.; Liu, M.C.; He, Z.Q.; Zhang, Q.Y.; Min, Q.W. Sustainability Assessment of a Qingyuan Mushroom Culture System Based on Emergy. *Sustainability* **2019**, *11*, 4863. [CrossRef]
46. Harris, M. Cultural Materialism and Behavioral Analysis: Common Problems and Fundamental Solutions. *Behav. Anal.* **2007**, *30*, 37–47. [CrossRef] [PubMed]
47. Dreslerová, D.; Mikuláš, R. An Early Medieval Symbol Carved on a Tree Trunk: Pathfinder or Territorial Marker? *Antiquity* **2010**, *84*, 1067–1075. [CrossRef]

48. Austin, D.F. Compendium of Symbolic and Ritual Plants in Europe. *Econ. Bot.* **2004**, *58*, 118–130. [[CrossRef](#)]
49. Dafni, A. Rituals, Ceremonies and Customs Related to Sacred Trees with a Special Reference to the Middle East. *J. Ethnobiol. Ethnomed.* **2007**, *3*, 28. [[CrossRef](#)]
50. Dafni, A. The Supernatural Characters and Powers of Sacred Trees in the Holy Land. *J. Ethnobiol. Ethnomed.* **2007**, *3*, 10. [[CrossRef](#)] [[PubMed](#)]
51. Maringira, G. Soldiers, Sacred Waters, and Landscapes: Zimbabwean Soldiers in the Democratic Republic of Congo War (1998–2002). *J. War Cult. Stud.* **2019**, *12*, 334–346. [[CrossRef](#)]
52. Allison, E.A. *Enspirited Places, Material Traces: The Sanctified and the Sacrificed in Modernizing Bhutan*; ProQuest LLC: Ann Arbor, MI, USA, 2009.
53. De Cleene, M.; Lejeunese, M.C. *Compendium of Symbolic and Ritual Plants in Europe*; Man & Culture: Ghent, Belgium, 2002.
54. Coggins, C.; Hutchinson, T. The Political Ecology of Geopietry: Nature Conservation in Tibetan Communities of Northwest Yunnan. *Asian Geogr.* **2006**, *25*, 85–107. [[CrossRef](#)]
55. Wang, M.K. *Qiang Nationality is Closely Linked with the Han and Tibetan Nationality: A Study on the Historical Anthropology of the Qiang People in Western Sichuan*; Zhonghua Book Company: Beijing, China, 2008; pp. 38–59.
56. Zeng, L. *Transformations of Indigenous Identity and Changing Meanings of Sacred Nature in Xishuangbanna, China*; ProQuest LLC: Ann Arbor, MI, USA, 2018.
57. Bourdieu, P. *Cultural Capital and Social Alchemy*; Shanghai People's Publishing House: Shanghai, China, 1997; p. 199.
58. Castells, M. *The Power of Identity*, 2nd ed.; Social Sciences Academic Press: Beijing, China, 2006; p. 414.